

REMARKS

Applicants request favorable reconsideration and withdrawal of the rejections set forth in the above-mentioned Office Action in view of the foregoing amendments and the following remarks.

Initially, Applicants note that the Office Action Summary and Office Action acknowledge a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f), to Japanese Patent Application Pub. No. 2003-197235, notes that the certified copy of the priority document has not been received, and further asserts that the subject application cannot claim priority to the Japanese patent application because the U.S. application was filed more than twelve months after the Japanese application.

Applicants submit, however, that the present application does not claim foreign priority to Japanese Patent Application No. 2003-197235. The present application was filed as a National Phase Application of International Application No. PCT/JP2004/015755. The International Application did not contain priority to any other application. Further, while the Declaration filed June 21, 2005 in the subject application noted the prior Japanese Patent Application, the Declaration further expressly notes that priority is not being claimed. Thus, there has been no foreign priority claim in the present application.

The Office Action indicates that the International Search Report that was cited on the PTO-1449 form with the Information Disclosure Statement of June 27, 2007 has been lined through since the Report is not “prior art under 37 C.F.R. §§ 1.97-1.98.”

Applicants respectfully submit that 37 C.F.R. §§ 1.97-1.98 does not have a “prior art” requirement for citation in an Information Disclosure Statement. The term “prior art” is not

recited in the text of these rules. Instead, these rules merely indicate that “patents, publications, or other information” can be submitted for consideration by the U.S. Patent and Trademark Office. See 37 C.F.R. § 1.98(a). Moreover, nothing in MPEP § 609.04(a), which describes the content requirements of an Information Disclosure Statement, indicates that information must be “prior art” to be cited on a PTO-1449. Accordingly, Applicants request that the strike through the International Search Report cited on the PTO-1449 form with the Information Disclosure Statement of June 27, 2007 be removed, and the Examiner indicate his consideration of this information.

Claims Status

Claims 1-6 remain pending, with claim 1 being the only independent claim. Claims 1 and 2 have been amended herein. Support for the amendments can be found throughout the originally filed disclosure, including, for example, in the originally-filed claims. Thus, Applicants submit the amendments include no new matter.

Claims 1-6 are rejected in the Office Action under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Claims 1-6 are also rejected under 35 U.S.C. § 102(d) as being anticipated by Japanese Patent Application Pub. No. 2005-03629 (hereinafter “JP ‘629”). Claims 1-6 are further rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe (U.S. Patent Application Pub. No. 2004/0239738). Claims 1-6 are further rejected under 35 U.S.C. § 103(a) as being unpatentable over Sato et al. (U.S. Patent Application Pub. No. 2003/0027894) in view of Watanabe.

Response to Rejections under 35 U.S.C. § 112

The Office Action indicates that the recitation in the claims of “a content” of the alkali is unclear.

Without conceding the propriety of the rejection, Applicants have herein amended claim 1 so as to no longer recite “a content” of the alkali. Accordingly, Applicants submit this rejection has been obviated.

The Office Action indicates that the recitation of “carboxyl 20 groups” in claim 2 is unclear.

Applicants note that the inclusion of “20” in this recitation was a typographical error, and have now deleted the “20” in the claim. Accordingly, Applicants submit this rejection has been overcome.

The Office Action further asserts that the “characterized in that” phrase recited in claim 1 is unclear.

Without conceding the propriety of the rejection, Applicants have amended claim 1 so as clarify the features of the claim. Applicants submit the amended claim language indicating the characterized in that phrase, clearly recites the invention, and, accordingly, the Section 112 rejection has been overcome.

Response to Rejection under 35 U.S.C. § 102(d) in view of JP ‘029

Applicants traverse the rejection under 35 U.S.C. § 102(d).

One of the requirements for a rejection under 35 U.S.C. § 102(d) is that the relied upon foreign patent must actually be granted before the U.S. filing date of the application being

rejected. MPEP § 2135.01(III)(A). In this regard, a mere published patent application is not a “patent” under 35 U.S.C. § 102(d). MPEP § 2135.01(III)(B).

In the present case, JP ‘029 is not a patent, but rather only a published patent application. Thus, JP ‘029 is not applicable under 35 U.S.C. § 102(d). Moreover, Applicants submit that the application on which JP ‘029 is based did not issue before the October 18, 2004 International Filing Date of the International Application to which the present application claims priority. Accordingly, Applicants request withdrawal of the rejection under 35 U.S.C. § 102(d).

Applicants further note that JP ‘029 is not applicable under any other section of 35 U.S.C. § 102 against the present application, as JP ‘029 published on February 10, 2005, which is subsequent to the October 18, 2004 International filing date of the International Application to which the present application claims priority.

Response to Rejections Under 35 U.S.C. § 103

Applicants respectfully traverse the rejections under 35 U.S.C. § 103.

As described in the subject specification at page 2, line 9 through page 3, line 11, when a block copolymer containing segments that are readily adherent to an insoluble colorant (hydrophobic blocks) and segments containing acidic groups having high compatibility with an aqueous medium (hydrophilic blocks), is used as a dispersant in a water-based ink, it is often necessary to appropriately add an alkali such that the acidic groups are neutralized. If this neutralization is insufficient, the acidic groups do not dissociate sufficiently, and hence, hydrophilicity cannot be exhibited, and the block copolymers with their colorants included therein cannot be stably dispersed in aqueous media. Conversely, if an alkali exists in excess beyond the neutral point, excessive ions are dissolved in the ink. These excessive ions weaken the

electrostatic repulsive force of block copolymer particles in which the colorant is included, so that flocculation of dispersed particles is promoted.

Therefore, as further described in the specification at page 3, line 12 through page 4, line 5, it is often important to control the degree of neutralization of acidic groups in a block copolymer in such a dispersion ink. Under the current circumstances, however, no actual degree of neutralization is ascertainable, and prior techniques were limited to such a method as adding an alkali in an amount calculated to be equivalent to acidic groups. Yet, the behavior of acidic groups in a polymer is complex, and neutralization does not necessarily proceed to a degree commensurate with the added amount of the alkali, and, as a result, it is difficult to control the neutralization to any desired degree. As a result, there is a potential problem that the degree of neutralization of the polymer may fall out of an optimal range. When a dispersion is stored over a long term or is stored at a high temperature such as 50 °C or 60 °C, the dispersion of the dispersed particles tends to become unstable. Even during its use in a conventional inkjet printer, a problem may be developed such as a deterioration of a color hue or clogging of an ejection orifice due to an increase in the particle size of dispersed particles.

As noted in the specification of the present application at page 5, lines 12-16, the inventors of the subject application have found that infrared absorption intensity ascribable to ionic groups formed by dissociation of the acidic groups contained in a block copolymer reflect the amount of existing ionic groups, and serve as an effective index which indicates the degree of neutralization.

With the foregoing in mind, amended independent claim 1 recites water-based ink for inkjet printers, wherein acidic groups of a block copolymer are neutralized by addition of alkali in a predetermined range, with the range being specified in terms of infrared absorption intensity.

The Office Action cites Wantabe as disclosing an aqueous composition comprising, inter alia, a block copolymer, wherein carboxylic acid groups are neutralized using amounts of a neutralizing agent falling within the scope of the claimed invention, with particular citation to paragraph 0106 of the reference. The Office Action concludes that it would have been obvious to one of ordinary skill in the art to use the claimed ink components and amounts of neutralizing alkali because they are encompassed by Wantabe.

Applicants submit, however, that Wantabe merely discloses adding the alkali in an amount from 1.0 to 1.3 times the neutralization equivalent for the dispersant consisting of an organic material to be converted to a salt. See Wantabe, paragraph 0106. In other words, Wantabe discloses adding the alkali based on a chemical equivalents calculation with the dispersant, like the above-described conventional method of adding alkali in an amount calculated to be equivalent to acidic groups of an ink. Wantabe does not disclose alkali added in an amount based on an infrared absorption intensity, as recited in independent claim 1. Moreover, as described hereinafter, the actual amounts of alkali added according to the teachings of Wantabe do not anticipate or suggest the amount of alkali defined in the range of independent claim 1.

As described at page 29, line 20 through page 30, line 6, and shown in Table 1 at page 31 of the specification of the subject application, water-based Inks 1 to 25 were prepared by changing the amount of alkali added from 0.125 to 2.5, supposing that the smallest amount of alkali required to achieve 100% neutralization was 1. Table 1 further shows the degrees of neutralization in the block copolymers of the inks, with the degrees of neutralization being measured in terms of IR intensity. See specification, page 28, line 23 to page 29, line 19. As further described at page 32, lines 2-4, Inks 1-25 were left at rest at 60 °C for 4 weeks, and the

particle size of their colorants were measured by dynamic light scattering method. Figure 1 of the application shows the percent increases in average particle size during the rest period remained within a range of approximately 1 to 1.6 % in Inks 1-14, which have a neutralization degree of 80 or 100 %. Figure 1 further shows the percent increases in average particle size during the rest period remained within a range of approximately 2.2 to 3 % in Inks 15-25, which have a neutralization degrees lower than 80% or at 100%. Thus, Inks 15-25 were pronouncedly inferior in dispersion ability to Inks 1-14. Also notable is the degrees of neutralization in Inks 16, 17, 19, 22, 23, and 25 were 100%, which is the upper limit of the range according to the present invention. The added amounts of alkali for these inks were 2.25 or 2.5, which is a large excess. Thus, presumably, the flocculation of dispersed colorant particles in Inks 16, 17, 19, 22, 23, and 25 was promoted during the rest period, resulting in a large percent increase in particle size.

Enclosed herewith is a Declaration under 37 C.F.R. § 1.132 by Tomoya Yamaoto, one of the inventors of subject invention. In the Declaration, Mr. Yamaoto describes an experiment wherein alkali was added in an amount of 1.0 and 1.3 times the calculated neutralization equivalent of two inks, identified as "Ink 26" and "Ink 27." As shown in the Table at page 2 of the Declaration, the degrees of neutralization of the resin in Inks 26 and 27 were 70% and 78% for alkali addition levels of 1.0 and 1.3, respectively. Thus, the inks were far less than completely neutralized. As a consequence, and as readily appreciated from the diagram on page 3 of his Declaration, the percent increase in average particle size of the resin after being left at rest at 60 °C for 4 weeks reached approximately 2.4 % and 2.1% for Inks 26 and 27, respectively. These percent increases in average particle size are considerably greater compared with the percent increases in average particle size of the resins in the above-mentioned Inks 1-14. As described

above, Inks 1-14 have added alkali amounts to give IR absorption intensities within the range specified in amended claim 1. Thus, the Declaration of Mr. Yamaoto demonstrates that Inks 26 and 27, which include Watanabe's specification of alkali added in an amount of 1.0 – 1.3 times the calculated neutralization equivalent of the two inks, are significantly inferior in dispersion stability than Inks 1-14, which include added alkali amounts to give IR absorption intensities within the range specified in amended claim 1 of the subject application.

For at least the foregoing reasons, Applicants submit Watanabe does not expressly disclose a water-based ink with alkali added in the range recited in claim 1. Further, Applicant submits that Watanabe is not suggestive of alkali added in the range recited in claim 1.

With respect to Sato et al., the Office Action acknowledges that the reference does not disclose the amount of alkali added to the disclosed aqueous ink. Thus, Applicants submit that Sato et al. alone does not disclose or suggest the water-based ink recited in claim 1. Moreover, given the above-noted deficiencies in Watanabe with respect to the alkali added in the range recited in claim 1, Sato et al. and Watanabe collectively fail to disclose or suggest the water-based ink recited in claim 1.

For at least the foregoing reasons, Applicants submit the references cited in the Office Action fail to disclose or suggest the invention recited in independent claim 1.

Dependent claims 2-6 are also allowable, in their own right, for defining features of the present invention in addition to those recited in independent claim 1. Individual consideration of the dependent claims is requested.

Applicants submit that all of the pending claims are patentably distinguishable over the references of record, and that the application is in condition for allowance. Favorable

reconsideration, withdrawal of the outstanding rejections, and passage to issue of the present application are earnestly solicited.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our New York office at the address shown below.

Respectfully submitted,

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